

“Effectiveness of oral health education on school children aged 13-15 years by dentist and school teacher”

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Abstract

Objectives: To evaluate the effectiveness of dentist educating school children and school teacher educating school children in improving knowledge, attitude and behaviour of school children.

Materials and methods: Six schools were selected and were divided into 2 government school, 2 aided school and 2 un-aided school. Each school was selected for dentist to provide oral health education another school was selected for school teacher to provide oral health education. At the baseline knowledge, attitude and behaviour of school children was assessed by questionnaire. Followed by oral health education by dentist to school children and school teacher, followed by school teacher educating school children. After 3 months the knowledge, attitude and behaviour questionnaire was re-assessed using same questionnaire.

Results: Dentist educating school children showed statistically significant improvement in the knowledge, attitude and behaviour of school children in all the 3 school. Whereas, school teacher group showed statistically significant improvement in only un-aided school. Government school and aided school showed significant improvement in knowledge score only.

Conclusion: Dentist are effective in improving knowledge, attitude and behaviour of school children of all the 3 school. Whereas school teacher are effective in improving knowledge, attitude and behaviour of school children of un- aided school.

Keywords: Oral health education, Knowledge, Attitude, Behaviour, School children.

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Schools may provide most effective long term oral health education as they offer communication for many years.⁷

Although there are many studies which suggests that providing oral health education to school children improves their oral health status but there is dearth of information on which approach is best.

The objective of the current study was to assess the effectiveness of oral health education given by dentist on one side and School teacher on other side in the form of knowledge, attitude and behaviour of school children aged 13-15 years in Dharwad city, Karnataka.

Materials and Methods

Study design: A Single - blind, randomized control study was done to assess the effectiveness of dentist educating school children and school teacher educating school children, in the form of knowledge, attitude and behavior of school children.

Ethical clearance: The Ethical clearance for the present study was obtained from the Institutional Ethical Committee of SDM College of Dental Sciences & Hospital, Dharwad.

The list of high schools and the total number school children studying in Dharwad city, Karnataka was obtained from Block education officer, Dharwad. There was a total of 79 high school which consist of 28 government schools, 31 aided schools and 20 unaided schools, with a total number of 20,865 school children studying in high schools which comprise of 12,419 boys and 8446 girls.

Introduction

Though there has been considerable improvement in oral health of children in last few decades, oral diseases still remain one of the most commonly occurring oral health problems in the children all over the globe. Dental caries has significant impact on general health of children and on social and economic well-being of the community.¹

Schools can provide supportive environment for promoting oral health among school children.² School children are considered to be an important target group for various oral health education activities with the underlying objective of inculcating healthy lifestyle practices to last for a life time.³

There are various oral health education program which include Askov School dental demonstration comprises of caries prevention and control, oral health education and dental care.⁴ The Goal of the oral health education is to improve knowledge, which may lead to change in the oral health behavior that contributes to better oral health.^{5,6}

Childhood is the critical period when skills and attitude are taking shape, more over children are not only fast learner but also anxious to acquire new skills.

The sample size was determined using simplified formula for proportion by Yamane.¹² By knowing the total population of high school children studying in Dharwad city which was 20,865. From this population, after calculating the sample size required was $(n) = 400$.

Keeping in view the attrition due to school children absentees or due to migration into other place, the sample size was increased to twenty five in each school. So the sample size was increased to 550 by convenience sampling.

The technique used was stratified random sampling. The stratification was based on 3 strata consist of government school, aided school and unaided school. From each strata 2 schools were selected from government school, 2 from aided and 2 from unaided school, for the purpose of the study, out of 2 government school one government school was selected for dentist to provide oral health education, another government school was selected for school teacher to provide oral health education. Similarly, out of 2 aided and unaided school, one school was provided oral health education by the dentist and another by school teacher respectively. The samples were collected from 6 different schools in a proportionate manner which consists of 140 school children from one government school, 64 school children was selected from aided and 71 school children were selected from unaided school. Similarly in another government school, aided school and unaided school the same numbers of subjects were selected which is representative of total population.

The required official permission for the study was obtained from the Head master of the respective school and informed consent was taken from the parents of the respective wards.

Pilot study was performed to assess the reliability of knowledge, attitude and behavior questionnaire, among 3 school comprising of forty five subjects with fifteen subjects in each school. The reliability analysis of the questionnaire was done using Split half reliability. The agreement revealed that the reliability was 0.8692.

Before providing oral health education, the data was collected among all the 6 schools using close ended questionnaire at baseline, which consist of information regarding the socio-demographic variables. Twelve questions pertaining to the oral health knowledge, five questions related to oral health attitude and five questions based on oral health behavior of the study subjects.

All the questionnaires were designed in Kannada language for Kannada medium government school and in English language for English medium aided and unaided school, to enhance the compliance of the study subjects.

After collecting the baseline data, the 6 schools were categorized into 2 groups. The 1st group consists of dentist educating school children of government school, aided school and unaided school and in another group consist of school teacher educating school children of another government, aided and unaided school.

Among dentist group a twenty minutes interactive session with school children was provided by the dentist in providing oral health education in the form of flip charts and models, containing information which includes normal tooth structure, different types of the teeth, two sets of dentition, various dental disease in the oral cavity such as dental caries, periodontal disease, malocclusion and oral cancer, its cause, symptoms and how it can be prevented and brushing technique was explained to the school children using models.

Similarly, the selected schools for school teacher oral health education, was provided by dentist to school teacher followed by the issue of flip charts and models to school teachers. Further, similar oral health education was provided by school teachers to school children.

After one and half months the reinforcement of oral health education was given by dentist to school children and dentist ensured that oral health education was given to school children by school teachers. School children were re-examined after 3 months using knowledge, attitude and behaviour questionnaire.

Statistical Analysis

The data collected was entered in computer (MS – Office 2007) Microsoft Excel 2007. The collected data was subjected to statistical analysis by using the statistical package SPSS version 21.0.

Shapiro-Wilk test was performed to assess the normal distribution; the variables did not follow normal distribution. Hence Non-parametric test were used.

Kruskal- Walli's test was performed to assess the knowledge, attitude and behaviour from baseline to 3 months of six schools respectively. A difference was considered to be of statistical significant if the $(P \leq 0.05)$.

Results

Table 1: Distribution of the study subjects from Baseline to 3 months

School	Mean age	No. of Male (%)	No. of Female (%)	No. of subjects at Baseline	No. of subjects after 3 months	No. of Drop outs (%)
Govt. School 1	14.12	56 (40.87%)	81 (59.12%)	144	137	7 (4.86%)
Govt. School 2	14.14	72 (57.6%)	53 (42.4%)	144	125	15 (10.41%)
Unaided School 1	13.98	40 (68.96%)	18 (31.03%)	64	58	6 (9.375%)
Un-aided School 2	14.125	40 (66.6%)	20 (33.33%)	64	60	4 (6.25%)
Aided School 1	13.55	32 (54.23%)	27 (45.76%)	67	59	8 (11.94%)
Aided School 2	13.58	40 (66.66%)	20 (33.33%)	67	60	7 (10.44%)
Total	13.98	280 (56.11%)	219 (43.88%)	550	499	47 (8.54%)

A total of 550 subjects were included in the present study with the mean age of 13.98. After 3 months 499 subjects were present, the total number of drop outs in all six schools were 47 (8.54%). The total number of males and females present at the baseline and after 3 months were 280 (56.11%) and 219 (43.88%). Only those subjects who completed the follow up visits were included in the final analysis.

Table 2: Pair wise comparison of Knowledge score of school children in all the 3 schools in Dentist group and school teacher group

School	School children knowledge score In Dentist group			School	School children knowledge score In School teacher group		
	Initial	Final	P value		Initial	Final	P value
Govt. School 1	0.5361	0.6783	0.0000*	Govt. School 2	0.5598	0.7096	0.0000*
Unaided school 1	0.4130	0.5422	0.0000*	Unaided school 2	0.5677	0.7617	0.0000*
Aided school 1	0.4655	0.5330	0.003*	Aided school 2	0.4958	0.6444	0.0000*

(P ≤ 0.05)

Table 2 showed statistically significant difference (P ≤ 0.05) in the knowledge score of school children in both dentist and school teachers group from baseline to 3 months respectively.

Graph 1: Pair wise comparison of Knowledge score of school children in Government, Un-aided and Aided school from baseline to 3 month in Dentist group and school teacher group

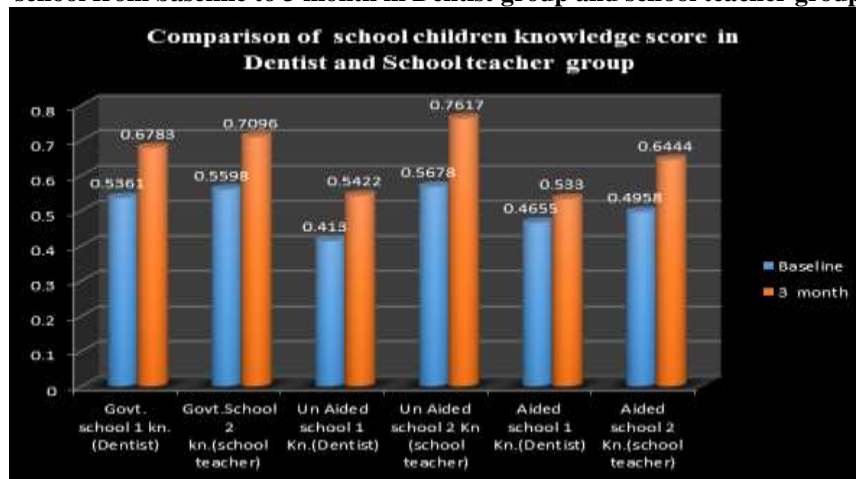


Table 3: Pair wise comparison of Attitude score of the school children in government, aided and unaided school in Dentist group and school teacher group

School	School children Attitude score in Dentist group			School	School children Attitude score in School teacher group		
	Initial	Final	P value		Initial	Final	P value
Govt. School 1	3.8161	3.8779	0.001*	Govt. School 2	3.7887	3.8306	0.189
Unaided school 1	3.5739	3.7739	0.004*	Unaided school 2	3.8281	4.05	0.001*
Aided school 1	3.8169	4.0644	0.004*	Aided school 2	3.85	3.83	0.537

(P ≤0.05)

Table 3 showed statistically significant difference (P ≤0.05) in the attitude score of all the 3 school children in dentist group. In School teachers group only unaided school 2 showed statistically significant difference (P ≤0.05) in the attitude score from baseline to 3 months interval respectively.

Graph 2: Pair wise comparison of Attitude score of school children in government, Un-aided and Aided school from baseline to 3 month in Dentist group and school teacher group

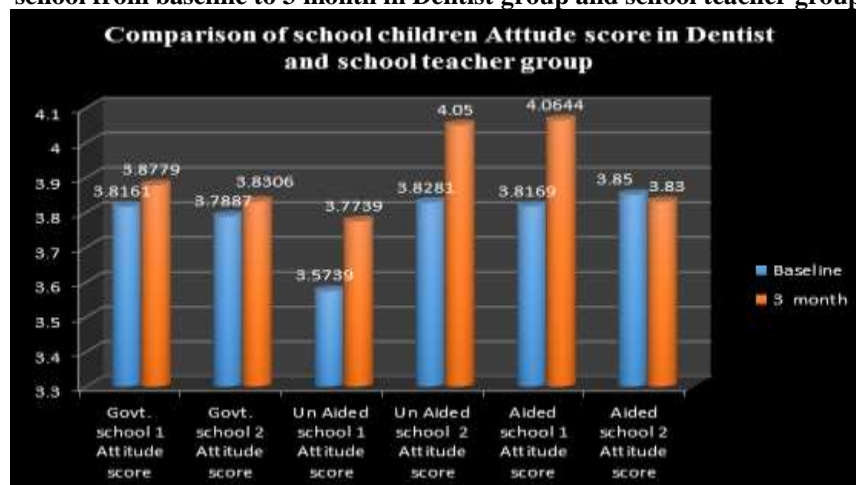
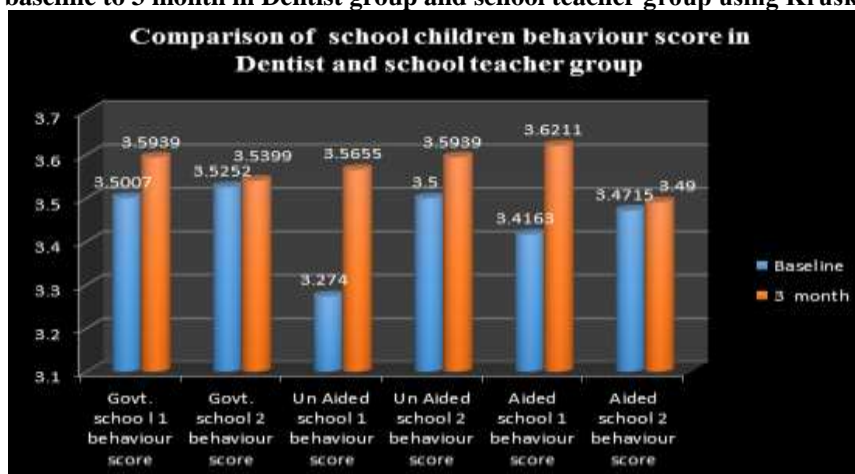


Table 4: Pair wise comparison of behaviour score of the school children in government, Un-aided and Aided school in Dentist group and school teacher group

School	School children behaviour score In Dentist group			School	School children behaviour score In School teacher group		
	Behaviour				Behaviour		
	Initial	Final	Change		Initial	Final	Change
Govt. School 1	3.5007	3.5939	0.016*	Govt. School 2	3.5252	3.5339	0.144
Unaided school 1	3.2740	3.5655	0.0128*	Unaided school 2	3.5007	3.5939	0.0000*
Aided School 1	3.4163	3.6211	0.008*	Aided school 2	3.4715	3.49	0.409

($P \leq 0.05$)

Table 4 showed statistically significant difference ($P \leq 0.05$) in the behaviour score of all the 3 school children among dentist group. In School teachers group only unaided school 2 showed statistically significant difference ($P \leq 0.05$) in the behaviour score from baseline to 3 months interval respectively.

Graph 3: Pair wise comparison of Behaviour score of school children in Government, Un-Aided and Aided school from baseline to 3 month in Dentist group and school teacher group using Kruskal Walli's test

Discussion

WHO has recommended oral health promotion through school for improving knowledge, attitude and behaviour related to oral health and for the prevention and control of oral disease among school children.²

The results of the knowledge score among school children in dentist group and school teacher group was compared from baseline to 3 months. The school children in dentist group showed statistical significant improvement in the knowledge score from baseline to 3 months in all 3 schools. Whereas, school children in school teacher group showed statistical improvement in the knowledge score in all 3 schools, which was statistically significant in both the group. This result suggests health education through school teacher's can be used as a aid, as it is less expensive and less time consuming as compared to dentist educating school children.

The knowledge score of school children in the school teacher educating group was compared with the study done by Peterson PE et al.⁸ Which showed 40%

increase in the knowledge score from baseline to 3 months. This increase in the percentage may be due to the instruction given by District educational officer and senior dentist to school teacher to use health education manual encompassing an appropriate booklet and guide for including oral health into lesson, use of health education material such as manuscript for puppet theatre, accompanying text for slide show, macro models, flannel graphs and work sheet as well as simplified questionnaire for self-evaluation of oral health knowledge by school children .

82.54% of school children brushed their teeth twice daily, this was compared to a study conducted by Kwan SYL et al.¹¹ which reported 94% of school children brushed their teeth twice daily which was comparatively higher percentage as compared to the present study.

However, Peterson PE, Danila I and Samoila.¹⁵ reported 37% of school children brushed their teeth twice daily which was comparatively lesser as compared with the present study.

We found in our study 100 % of school children answered that sticky food /sugary food causes dental caries, which was similar to the study conducted by Shenoy RP, Sequeira PS.¹⁰ and Kwan SYL et al.¹¹ Which showed 31% and 80% this figure was comparatively lower as compared with our study.

In this study 80.95% answered gum disease is because of improper brushing which was similar with the study conducted by Kwan SYL et al.¹¹ Which was found 72% of school children had knowledge that gum disease is because of improper tooth brushing.

The present study reported 57.14% of school children answered; use of fluoride dentifrice decreases dental caries, which was comparatively higher the as compared with the study conducted by Zhang Q et al.¹⁹ reported that 11%.

73.02% of school children brushed their teeth twice daily, which was similar with the study conducted by Rong WS et al.⁶ Which reported 87.6% which was comparatively higher as compared to the present study.

The results of the Attitude and behaviour among school children in dentist group and school teacher group showed statistically significant difference in all the 3 school children in dentist group and only in unaided school in school teacher group. This may be due to dentist professional skills in educating, motivating and promoting oral health to school children may have involved school children to improve their oral health attitude among all the 3 schools.

Whereas, school teachers of unaided schools are highly efficient in providing oral health education and motivation in the form of developing good attitude and behaviour skills towards oral health among school children.

Conclusion

Oral health education given by dentist to school children was effective in all the 3 categories of the school as it enhanced the knowledge, attitude and behaviour of the school children.

Oral health education given through school teacher to school children was effective only in un-aided school in the form of knowledge, attitude and behaviour of school children. In government school and aided school oral health education given by school teacher was effective in the form of knowledge score only.

Hence, School teachers can be recommended to provide oral health education in future to improve the knowledge, attitude and behaviour of un- aided school.

Dentist can also be recommended to provide oral health education to school children in order to improve the knowledge, attitude and behaviour among government school, aided school and unaided school respectively.

Conflict of interest: There is no conflict to declare.

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References

1. Sheiham A. Dental caries affects body weight, growth and quality of life in pre-school children. *BDJ* 2006;201(10):626-626.
2. Mehta A, Kaur GK. Oral health related knowledge, attitude and practices among 12 yrs old school studying in rural areas of panchkula, India. *Indian journal of dental research* 2012;23(2):293.
3. Goel P, Sehgal M, Mittal R. Evaluating the effectiveness of school based health education programme among children of different socio economic groups. *J Indian Soc Pedod Prev Dent*;2005;23(3):131-133.
4. Jordan. WA. Askov, Minnesota, dental demonstration program. *Public Health Dentistry* 1952;9(1):3-6.
5. Pakhomov GN. Future trends in oral health and disease. *Int Dent J* 1999;49:27-32.
6. Rong WS, Bian JY, Wang WJ, Wang JD. Effectiveness of an oral health education and caries prevention program in kindergartens in China. 2003;31(6):412-6.
7. Rajesh G, Prasad KVV, Mohanty VR, Javali SB. Effect of various methods of oral health education on oral health knowledge and oral health status of high school children in Gadag town –Randomized controlled trial. *Journal of Indian Association of Public Health Dentistry*. 2008;(11):22-29.
8. Peterson PE, Peng B, Tai B, Bian Z, Fan M. Effect of a school-based oral health education programme in Wuhan City, Peoples Republic of China. *International Dental Journal* 2004;54(3):33-4.
9. Zhang Q, Helderman VP, Wim Y, Robert B, Bian Z, Zhuan F, Mingwen H, Holmgren, Christopher. Situation analysis of dental caries and existing oral health care of children and adolescent in Hubei province, people's republic of China: Implication for the change. *Oral Health Prev Dent* 2008;6:13-21.
10. Shenoy RP, Sequeira PS. Effectiveness of a school dental education programme in improving oral health knowledge and oral hygiene practices and status of 12 to 13 yrs old school children. *Indian J Dent Res*. 2010;21(2):253-259.
11. Kwan SYL, Peterson PE, Pine CM, Borutta A. Health promoting schools; An opportunity for oral health promotion. *Bulletin of World health organization* 2005;83:677-685.
12. Israel GD. Determining sample size. *University of Florida* 1992:1-5.
13. Peterson PE, Torres AM. Preventive oral health care and health promotion provided for children and adolescents by the Municipal Dental Health. *International Journal of Paediatric Dentistry* 1999;9(2):81-91.
14. Kowash MB, Pinfield A, Smith J, Curzon M EJ. Effectiveness on oral health of a long-term health education programme for mothers with young children. *British Dental Journal* 2000;188(4):201–205.
15. Petersen PE, Danila I, and Samoila A. Oral health behavior, knowledge, and attitudes of children, mothers, and schoolteachers in Romania in 1993. *Acta Odontologica Scandinavica* 1995;53(6):363-368.
16. Phadraig MG, Guerin S, Nunn J. Train the trainer? A randomized controlled trial of a multi-tiered oral health education programme in community based residential services for adults with intellectual disability. *Community Dent Oral Epidemiol* 2013;41(2):182–192.
17. Worthington HV, Hill KB, Mooney J, Hamilton FA, Blinkhorn AS. A Cluster Randomized Controlled Trial of a Dental Health Education Program for 10-year-old Children. *Journal of Public Health Dentistry* 2001;61(1):22-27.

18. Helderma WHV, Munck L, Mushendwa S, Hof MA, Mrema FG. Effect evaluation of an oral health education programme in primary schools in Tanzania. *Community Dentistry and Oral Epidemiology* 1997;25(4):296-300.
19. McWhorter AG, Seale NS, King SA. Infant oral health education in U.S. dental School curricula. *American Academy of Pediatric Dentistry* 2001;23(5):407-409.